

IN THE SPECIFICATION:

Please amend the specification of the application as follows:
Page 1, after the title, please insert:

The present application claims priority of Patent Document No. 02 026 895.9 filed in Europe on December 03, 2002, the disclosure of which is expressly incorporated by reference herein.

Please amend paragraph 5 as follows:

[0005] This object is achieved according to the invention in that not ~~Not~~ only the housing ~~jacket~~ of the rotor space is made of sheet metal, but also the connection pipe is of sheet metal, and that the housing ~~jacket~~ and the connection pipe have a heat conductive interconnection. In this way, a substantially undisturbed flow of heat from the source of heat, i.e. the combustion motor, up to the turbocharger is ensured so that a subsequent catalyst, in spite of simultaneous operation of the turbocharger, reaches relative quickly its normal operational condition. In short: the heat absorption capacity is smaller than with a cast housing plus connection pipe.

Please amend paragraph 11 as follows:

[0011] From a combustion motor 20, merely indicated in dash-dotted lines in Fig. 1, four of the five elbow pipes 1 lead each to respective T-shaped exhaust gas pipe pieces ~~or parts~~ 3 ~~which form all together a manifold~~ and, finally, discharge all into a manifold piece 4. The four exhaust gas pipe pieces 3 and the manifold piece 4 together form an exhaust manifold. It is clear that this is only given by way of example, and that the invention is not restricted to a

certain number of elbow pipes 1. The T-shaped exhaust gas pipe pieces 3 are welded to an inlet flange 2 which is attached to the combustion motor 20. However, the invention is not restricted to such a construction, because an exhaust gas manifold of any kind known in the art may be used where the manifold piece 4 is then inserted. In the present case, it is advantageous to cover the individual pieces parts 3, 4 by a lower cover 16 from below, and an upper cover may also be provided and be opposed to the lower cover 16. Between the individual pieces sections 3, 4 of the exhaust manifold and the covers, such as at 16, an insulation layer, e.g. of a nonwoven fabric, may be provided.

Please amend paragraph 12 as follows:

[0012] The manifold piece 4 forms the interconnection between the manifold piece ~~formed of the parts 3~~ and a turbine housing 17. In this, manifold piece 4 terminates the middle elbow pipe 1 (it could be any other elbow pipe instead, for example an elbow pipe at the end of the manifold), and ~~while it~~ is connected in the axial direction to each one of the T-shaped exhaust gas pipe pieces 3. Advantageously, at least part of these components of the manifold, preferably at least the manifold piece 4, but optionally also at least part of the T-shaped exhaust gas pipes, is formed of a shaped sheet metal. For shaping, explosive forming is conceivable, but preferably stamping or isostatic pressing or hydraulic pressing (e.g. by applying hydraulic pressure to the inner surfaces onto a sheet metal in a corresponding die). An alternative could be to manufacture the manifold piece 4 as a precision cast part.

Please amend paragraph 13 as follows:

[0013] A further connection pipe from the manifold piece 4 could lead to a by-pass channel 5 through which at least part

of the exhaust gas of the combustion motor 20 may be directed to another place of use, such as a catalyst, under the control of a flap 10 (the arrow shows only the place where this flap is) which is actuated by a lever 11. It can be seen that the lever 11 is fastened to a shaft supported in a flange 9 that is connected, e.g. welded, to a discharge channel 8. A special sleeve, as in the prior art, for accommodating the flap 10 and actuation shaft together with the lever 11, can be omitted.

Please amend paragraph 14 as follows:

[0014] The turbine housing ~~or turbine housing jacket~~ 17 is generally ~~about~~ spirally shaped in a conventional manner to guide the exhaust gas to a turbine or turbine rotor (see 18 in Figs. 3 and 4) which is situated in the middle of the spiral. This turbine housing ~~jacket~~ 17 surrounds a rotor space 15 wherein the turbine rotor 18 (see Figs. 3, 4) rotates. As best seen in Fig. 1, the turbine housing ~~jacket~~ 17 is composed of a left spiral housing half part 6 and a right housing half part 7, the halves being welded together along a line or seam 19 (Fig. 1), In this way, a sealed and less space consuming unit is provided than is possible with a flange connection (which is also heavier in weight) along the line 19. To the right housing half piece 7 the bearing housing or the compressor housing of a turbocharger can be connected, the compressor being driven by the turbine 18. For connecting these parts of a turbocharger, a bearing housing flange 14 is provided which is welded to the right housing half part 7 or is sealingly connected to it in any other way known in the art. The left housing half part 6, in turn, forms not only the half spiral, but also the known wheel contour of the turbine 18 (Figs. 3, 4) and the connection to a discharge channel 8 as is customarily provided. This discharge channel 8 may preferably be made of a sheet metal and may be connected to the turbine

housing ~~jacket~~ 17 in a similar manner as will be described later with reference to the connection between the exhaust gas inlet ~~supply channel~~ 21 and the turbine housing ~~jacket~~ 17 in the context of Figs. 3 and 4.

Please amend paragraph 15 as follows:

[0015] For, as may be seen, the welding seam 19 does not only extend over the spiral housing part of the turbine housing ~~jacket~~ 17, but is prolonged such that it is integral also with the exhaust gas inlet ~~gas supply channel~~ 21 that is immediately connected to the manifold piece 4. In this way, heat losses are reduced, and manufacture is facilitated. A further layer of sheet metal may be provided over the turbine housing, thus produced, such as a cover 13, and, if desired, also a bursting ~~jacket~~ (for preventing bursting parts to escape the housing). Within the scope of the present invention, it is quite possible to provide four layers of sheet metal. On the other hand, combinations are also possible where some components, such as the cover 13 or the bearing housing flange 14 mentioned above are precision cast.

Please amend paragraph 18 as follows:

[0018] Both parts may be kept spaced by spacers 23, suitably being insulating, wherein the spacer 23 shown in Fig. 3 may be annular and may surround the exhaust gas inlet ~~discharge channel~~ 21 of the turbine housing ~~jacket~~ 17. In the end region of the sheet metal ~~jacket~~ 22 shown in Fig. 3 at right, this sheet metal ~~jacket~~ 22 is pressed against the inner sheet metal layer (part 6) and, for example, welded thereto.

Please amend paragraph 20 as follows:

[0020] To the exhaust gas inlet ~~supply channel~~ 21, integrally produced with the housing ~~jacket~~ 17, a branch pipe

4' of the manifold piece 4 (see Fig. 2) is connected by a mere sliding connection without welding, this branch pipe forming a connection conduit. It may be seen that at least this branch pipe connection conduit 4', but optionally the whole manifold piece 4, is constructed of an inner pipe layer 27, an insulating layer 28 and an outer sheet metal layer 29. As may be seen, this outer sheet metal layer 29 may consist of a thicker sheet metal, although bursting protection is not required in this area. Nevertheless, a thicker outer layer may improve insulation, while inside a better heat conduction is intended. However, it should be noted here that, although an integral construction of the branch pipe connection conduit 4' with the manifold piece 4 is preferred, it is not required in all cases.

Please amend paragraph 22 as follows:

[0022] A still improved heat conduction is obtained with an embodiment according to Fig. 4. This embodiment differs from the embodiment of Fig. 3 in that the conical portion 32' has a smaller angle α that in the previous embodiment. This angle α should amount to 30° in maximum, and preferably 20° in maximum, so that the inner sheet metal layer 27 engages it frictionally and heat conduction is effected over a relative large area. This angle α should, however, not be too small not to make inserting of the inner tubular sheet metal too difficult. Therefore, it should amount at least to 7° . The most favorable construction is advantageously so that the conical portion 32' serves as an input funnel for the spiral housing ~~jaeket~~ 17, and is enlarged just to such an extent that the branch pipe connection conduit 4' can be inserted into a cylindrical end portion 32" thereby engaging the inner surface of the cylindrical portion 32". In this way, the connection is well sealed. The length of the cylindrical portion 32" is

suitably chosen so that the branch pipe ~~connection conduit~~ 4' may shift in it in the case of heat expansion or due to vibration of the combustion motor 20. It will be understood that it would, theoretically, be possible to form the end of the exhaust gas inlet ~~supply channel~~ 21 without a conical portion or transition in such a way that the cylindrical portion 32" mentioned above is in contact with the branch pipe ~~connection conduit~~ 4'.

Please amend paragraph 27 as follows:

[0027] Various modifications are conceivable within the scope of the present invention, for example that not the larger dimensioned exhaust gas inlet ~~supply channel~~ 21 surrounds the smaller branch pipe ~~connection conduit~~ 4', but just vice-versa. However, such a construction would be less preferred, because it is less favorable from a fluidic point of view than in the embodiment illustrated. Furthermore, it is, of course, possible to use only one sheet metal layer which has preferably either a sliding connection or a welded connection between the individual parts. In addition, the spacers 23 shown in Fig. 3 may be formed in a variety of shapes and can be arranged wherever desired between the layers, if only their function is ensured.